Washington State Department of Health

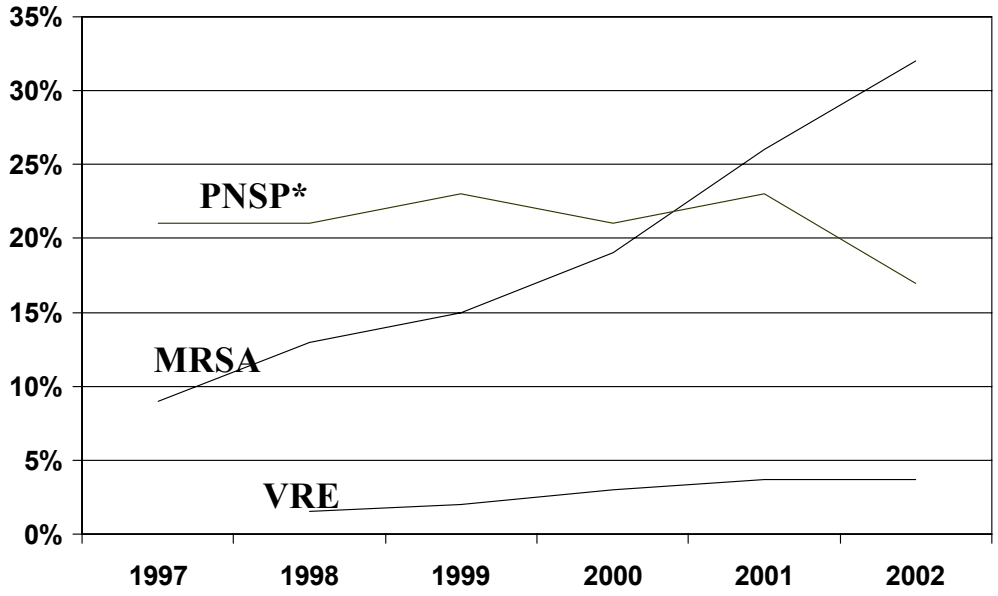
Communicable Disease Epidemiology

Antibiotic Resistance Sentinel Network
Surveillance Update 6/30/03

Hospitals and laboratories in Washington participate in a network of sentinel reporters to provide information on trends of anti-microbial resistance. Participants report annual Cumulative Antimicrobial Susceptibility Test Data (antibiograms), semi-annual isolate reports for oxacillin resistant Staphylococcus aureus (MRSA) and vancomycin resistant enterococci (VRE), and reports of invasive pneumococcal cases.

During 2002, antibiograms were aggregated from 30 laboratories that provided microbiology services to 38 hospitals and 24 outpatient populations located throughout the state. Semi-annual reports on targeted organisms were received from 27 facilities and 18 facilities submitted case reports for invasive pneumococcal disease.

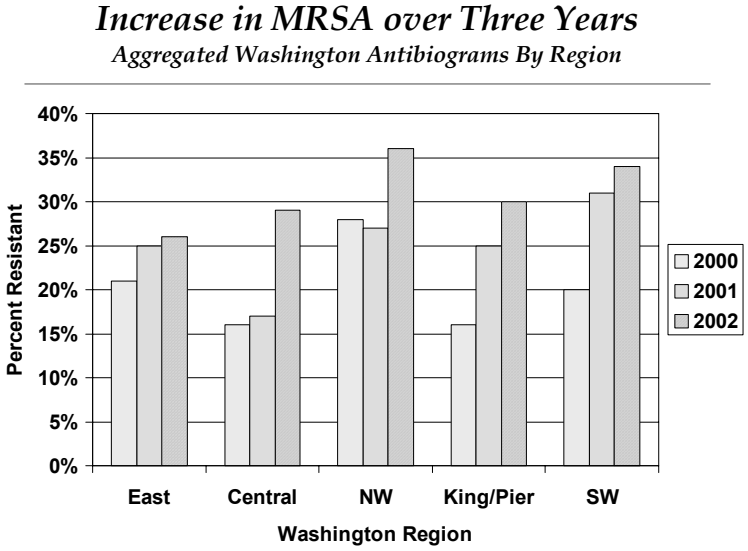
WA State Antibiotic Resistance Trends



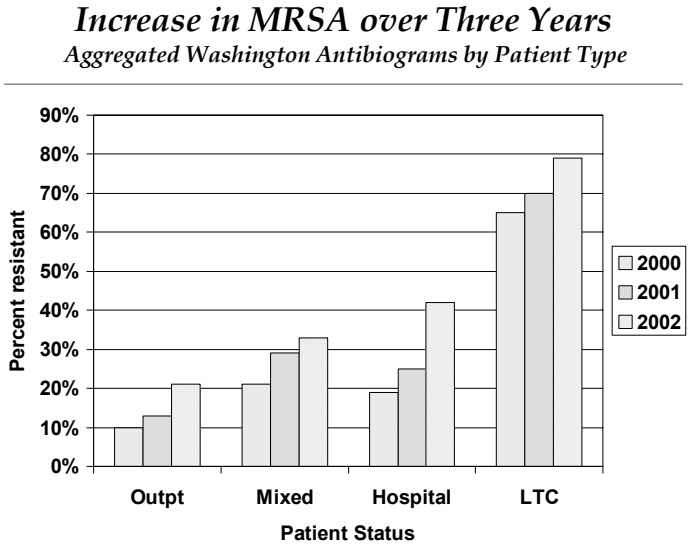
*Invasive pneumococci non-susceptible to penicillin

Methicllin Resistant Staphylococcus aureus (MRSA/ORSA)

The prevalence of MRSA is increasing in Washington, as it is in other parts of the country. MRSA is the most common nosocomial pathogen in this country and has emerged in community settings, affecting individuals without health care- associated risk factors. In 2002 across Washington, thirty-one percent of 32,055 S. aureus isolates aggregated from annual antibiograms (mixed inpatient and outpatient data) were resistant to oxacillin, which indicates resistance to all the penicillins and the cepahalosporins. This is a 140% increase in the proportion of resistant bacteria over the past five years, from 13% to 31%. Resistance varied among regions of the state from 26% to 36%.



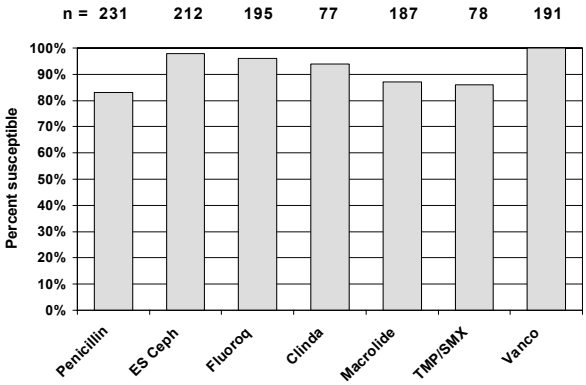
From Cumulative Susceptibility Test Data reported separately by patient status, prevalence of MRSA for hospitalized patients was 42%, with resistance in hospitals varying among regions of the state from 34% to 52%. Prevalence of MRSA was highest among cultures taken from Long Term Care Facility patients (79%).



Drug Resistant S. pneumoniae (DRSP)

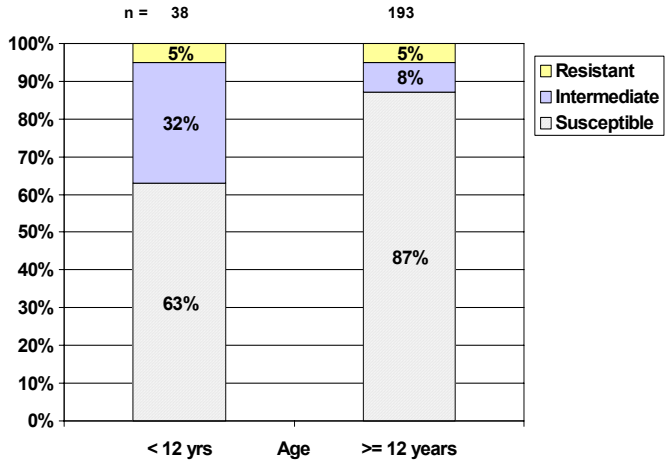
Prevalence of DRSP in the United States shows considerable geographic variation, with up to 40% of pneumococcal infections in some areas of the country resistant to at least one drug. Comparison of local data on invasive disease to recent national data suggests Washington continues to experience higher than average susceptibility to penicillin (83% vs. 73%), ES cephalosporins (98% vs. 82%) and macrolides (90% vs. 78%).[1]

Invasive S. Pneumoniae Susceptibilities
2002



In Washington from 1997 through 2001, penicillin non-susceptibility ranged between 21-23% of reported invasive isolates. In 2002 this proportion was lower at 17% and susceptible isolates made up 83% of all those reported. This corresponds to a small declining trend in resistance seen in some, but not all, parts of the country. However, the proportion of non-susceptible isolates from children has not followed this pattern. In 2002, non-susceptibility to penicillin was significantly greater for children less than twelve years old (37%) than for adults (13%), and has increased from 33% in 1997-1998.

S. Pneumoniae Penicillin Susceptibility 2002
Children versus Adults- Invasive Cases



[1]Active Bacterial Core Surveillance (ABCs) Report 2000. Http://www.cdc.gov/ncidod/dbmd/abcs

TABLES

Table 1
Invasive S. pneumoniae Isolates with Penicillin Susceptibilities
Non-duplicated Blood and Spinal Fluid Isolates 1997-2002

	Isolates	Non-susceptible		Intermediate		Fully Resistant	
Year	Total Number	NS Number	NS Percent	Int Number	Int Percent	R Number	R Percent
1997	166	34	20.5	16	9.6	18	10.9
1998	278	58	20.9	27	9.7	31	11.2
1999	190	43	22.6	35	18.4	8	4.2
2000	90	19	21.1	13	14.4	6	6.7
2001	69	16	23.2	9	13.0	7	10.2
2002	231	39	16.9	28	12.1	11	4.8

Table 2
S. pneumoniae Isolates Tested for Level of Resistance – All body sites With Penicillin Susceptibilities
Aggregated Washington Antibiograms 2000 - 2002

	Isolates	Intermediate		Fully resistant		Non susceptible
Year	Total Number	NS Number	NS Percent	Int Number	Int Percent	Percent
2000	816	137	17	117	14	31
2001	1395	211	15	140	10	25
2002	842	168	20	81	10	30

Table 3
All Reported S. pneumoniae Isolates - All body sites With Penicillin Susceptibilities
Aggregated Washington Antibiograms 2000 - 2002

Year	Isolates Tested	Percent Susceptible	Non-susceptible
2000	1361	72	28
2001	2121	74	26
2002	1871	74	26

Table 4
Percent of Staph aureus isolates resistant to oxacillin (MRSA)
Aggregated Washington Antibiograms, 1997 – 2002

Year	Isolates Tested	Percent Susceptible	Percent Resistant
1997	3602	91	9
1998	5406	87	13
1999	8910	85	15
2000	24546	82	18
2001	30452	77	25
2002	29934	69	31

Table 5
MRSA Isolates by Washington Region
Aggregated Washington Antibiograms 2000 - 2002

Year	East		Central		Northwest		King/Pierce		Southwest	
	N tested	% R	N tested	% R	N tested	% R	N tested	% R	N tested	% R
2000	1883	21	3387	16	2884	28	14030	16	2362	20
2001	1834	25	3480	17	3436	28	17898	25	3804	31
2002	2122	26	1749	29	3050	36	18282	30	4731	34

Table 6
MRSA Isolates by Patient Status
Aggregated Washington Antibiograms 2000 - 2002

Year	Mixed		Hospital		Outpatient		Long-term care	
	N Tested	Percent	N Tested	Percent	N Tested	Percent	N tested	Percent
2000	14772	21	4522	19	5479	10	156	65
2001	19797	29	6126	25	5601	13	325	70
2002	19905	32	4758	42	7034	21	358	79

Table 7
Percent of Enterococcal isolates resistant to vancomycin (VRE)
Semi-annual sentinel reports 1998 - 2002

Year	Isolates Tested	Percent Resistant
1998-1	4141	1.3
1998-2	4541	1.7
1999-1	4658	2.9
1999-2	4600	3.1
2000-1	5261	3.0
2000-2	5246	2.2
2001-1	7540	4.1
2001-2	6793	3.3
2002-1	8567	3.9
2002-2	8442	3.7

Table 8
Vancomycin Resistant Enterococcal Isolates by Species
Aggregated Washington Antibiogram 2000 - 2002

	Isolates		Enterococcal sp		E. faecalis		E. faecium	
Year	N Tested	% VRE	N Tested	% VRE	N Tested	% VRE	N Tested	% VRE
2000	8442	4.8	5953	2.3	2087	0.8	402	70.5
2001	11833	5.5	7808	2.3	3279	1.5	746	71.0
2002	18341	5.5	12436	3.3	4937	1.0	968	71.0